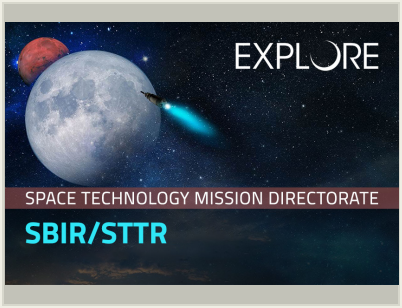
Automated Behavior and Cohesion Assessment Tools, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

An important consideration of long duration space flight operations is interpersonal dynamics. The crew will be working very closely for extended periods of time and the distance between the spacecraft and earth-bound flight surgeons will prevent real-time communication. Breakdown of morale or the psychology of crew may result in increased stress, conflict, erratic behaviors, reduced cohesion, and perhaps even rebellion. Flight surgeons have stated the need for unobtrusive monitoring to help detect if crews are having difficulties with coping with long duration spaceflight environments. NASA has tens of thousands of procedures for the space shuttle and ISS, and the new Constellation vehicles will also have thousands of procedures. These procedures, and the training in performing them, represent the models and data necessary to build a behavioral assessment tool. Currently procedures are authored in Word. Under this paradigm, developing behavioral models of crew procedure performance would require re-coding all procedures by hand. However, the Constellation program is planning to use an XML representation of procedures, which facilitates automatic translation. Nominal performance metrics can determined during training and then compared during the actual missions. Deviations between the nominal and current performance can be flagged for additional attention. Since crew members can perform upwards of hundreds of procedures a week, there will be substantial data with which to assess crew behavioral performance The long-term goal of this project is to develop a set of applied technologies that can monitor crew health and cohesiveness in an unobtrusive manner and identify potential abnormalities for feedback to astronauts and flight surgeons for further investigation. The goal of the Phase I will be to develop a set of recommendations regarding technologies and techniques to accomplish the objectives and a conceptual design of a system that implement the recommendations



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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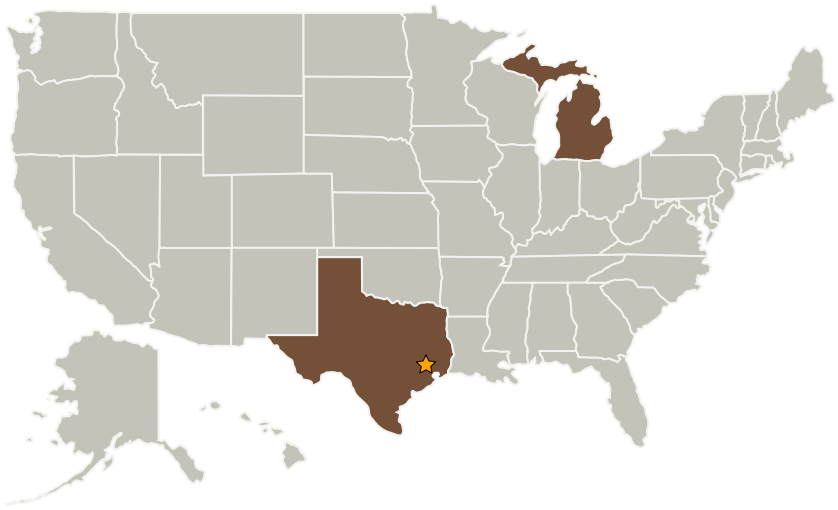
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Cybernet Systems Corporation	Supporting Organization	Industry	Ann Arbor, Michigan

Primary U.S. Work Locations	
Michigan	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.3 Behavioral Health and Performance